THE ASTROPHYSICAL JOURNAL CONTENTS OF VOLUME 401, PART 1

1992 DECEMBER 10, Number 1

	Page	Fiche
COBE DIFFERENTIAL MICROWAVE RADIOMETERS: PRELIMINARY SYSTEMATIC ERROR ANALYSIS A. Kogut, G. F. Smoot, C. L. Bennett, E. L. Wright, J. Aymon, G. De Amici, G. Hinshaw, P. D. Jackson, E. Kaita, P. Keegstra, C. Lineweaver, K. Loewenstein, L. Rokke, L. Tenorio, N. W. Boggess, E. S. Cheng, S. Gulkis, M. G. Hauser, M. A. Janssen, T. Kelsall, J. C. Mather, S. Meyer, S. H. Moseley, T. L. Murdock, R. A. Shafer, R. F. Silverberg, R. Weiss, & D. T. Wilkinson	1	221-B1
NON-SELF-SIMILAR CLUSTERING OF GALAXIES Mirt Gramann	19	221-C7
A QUANTITATIVE MEASURE OF STRUCTURE IN THE THREE-DIMENSIONAL GALAXY DISTRIBUTION: SHEETS AND FILAMENTS Arif Babul & Glenn D. Starkman	28	221-D3
THE SCALING ANALYSIS AS A TOOL TO COMPARE N-BODY SIMULATIONS WITH OBSERVATIONS: APPLICATION TO A LOW-BIAS COLD DARK MATTER MODEL G. Yepes, R. Dominguez-Tenreiro, & H. M. P. Couchman	40	221-E3
A DISTANCE-INDEPENDENT CALIBRATION OF THE LUMINOSITY OF TYPE Ia SUPERNOVAE AND THE HUBBLE CONSTANT Bruno Leibundgut & Philip A. Pinto	49	221-F1
MAGNETOHYDRODYNAMIC MODELS FOR EXTRAGALACTIC JETS. I. GENERAL METHOD BASED ON CONSERVATION LAWS Paola Pietrini & Guidetta Torricelli-Ciamponi	60	221-G1
ELECTRON INJECTION IN COLLISIONLESS SHOCKS Amir Levinson	73	222-A1
NEW RESULTS ON THE RADIO-FAR-INFRARED RELATION FOR GALAXIES Rob Price & Nebojsa Duric	81	222-A1
RADIATIVE ACCELERATION BY SYNCHROTRON SOURCES G. Ghisellini, G. Bodo, & E. Trussoni	87	222-B5
INFRARED SPECTRA OF OBSCURING DUST TORI AROUND ACTIVE GALACTIC NUCLEI. 1. CALCULATIONAL METHOD AND BASIC TRENDS Edward A. Pier & Julian H. Krolik	99	222-C5
SEYFERT GALAXY ULTRAVIOLET EMISSION-LINE INTENSITIES AND VARIABILITY: A SELF-CONSISTENT PHOTOIONIZATION ANALYSIS APPLIED TO BROAD-LINE-EMITTING GAS IN NGC 3783 Anuradha P. Koratkar & Gordon M. MacAlpine	110	222-D3
GAMMA-RAY LINE AFTERGLOW FROM BURST ENVIRONMENTS H. S. Fencl, R. N. Boyd, & Dieter Hartmann	120	222-E1
RADIATION-VISCOUS BOUNDARY LAYERS Nahum Arav & Mitchell C. Begelman	125	222-E7
FAST DYNAMOS, COSMIC RAYS, AND THE GALACTIC MAGNETIC FIELD E. N. Parker	137	222-F7
INTERSTELLAR CLOUD SHAPES: A MINIMUM-HYPOTHESIS ACCOUNT INVOLVING A PURELY GRAVITATIONAL EFFECT Robert C. Fleck, Jr.	146	222-G3
GALACTIC EVOLUTION OF D AND ³ He Gary Steigman & Monica Tosi	150	222-G
ON DETERMINING THE PRIMORDIAL HELIUM ABUNDANCE FROM THE SPECTRA OF H π GALAXIES Alison Campbell	157	223-A

		Page	Fiche
RADIO CONTINUUM AND RADIO RECOMBINATION LINE OBSERVAT David M. Mehringer, F. Yusef-Zadeh, Patrick Palmer, & W. M. Goss	IONS OF SAGITTARIUS B1 AND G0.6-0.0	168	223-B1
THE DYNAMICS OF MOLECULAR CLOUD ENVELOPES IN A VARYING C. Bréart de Boisanger, JP. Chièze, & B. Meltz	GULTRAVIOLET RADIATION FIELD	182	223-D1
ENHANCEMENT OF DIFFUSIVE TRANSPORT IN OSCILLATORY FLOW E. Knobloch & W. J. Merryfield	'S	196	223-E3
TWO-TEMPERATURE MODELS OF OLD SUPERNOVA REMNANTS WIT THERMAL CONDUCTION Wei Cui & Donald P. Cox	TH ION AND ELECTRON	206	223-F1
FAR-ULTRAVIOLET OBSERVATIONS OF THE SUPERNOVA REMNANT HOPKINS ULTRAVIOLET TELESCOPE Olaf Vancura, William P. Blair, Knox S. Long, Arthur F. Davidsen, Charles Paul D. Feldman, Henry C. Ferguson, Richard C. Henry, Randy A. Kimble,	W. Bowers, W. Van Dyke Dixon, Samuel T. Durrance,	220	223-G1
HYDRODYNAMICAL EVOLUTION OF COALESCING BINARY NEUTRO Frederic A. Rasio & Stuart L. Shapiro	ON STARS	226	223-G9
STELLAR ENCOUNTERS INVOLVING NEUTRON STARS IN GLOBULAI M. B. Davies, W. Benz, & J. G. Hills	R CLUSTER CORES	246	224-B1
THE GALACTIC GLOBULAR CLUSTER SYSTEM: EMPIRICAL RELATIO RATIO AND METALLICITY Filippina Caputo & Renato De Santis	ONSHIP BETWEEN LIGHT-TO-MASS	260	224-C1
ON THE MASS-RATIO DISTRIBUTION OF SPECTROSCOPIC BINARIES Tsevi Mazeh, Dorit Goldberg, Antoine Duquennoy, & Michel Mayor	S WITH SOLAR-TYPE PRIMARIES	265	224-C9
POLYCYCLIC AROMATIC HYDROCARBON FORMATION IN CARBON- Isabelle Cherchneff, John R. Barker, & Alexander G. G. M. Tielens	RICH STELLAR ENVELOPES	269	224-D1
AN INTERPRETATION OF THE SPECTRAL PROPERTIES OF HOT HYD STRATIFIED H/He MODEL ATMOSPHERES Stéphane Vennes & Gilles Fontaine	DROGEN-RICH WHITE DWARFS WITH	288	224-E7
POLARIZATION CANCELLATION IN THE TWO-COMPONENT WINDS M. Taylor & J. P. Cassinelli	FROM WOLF-RAYET STARS	311	224-G5
DYNAMICS OF ECCENTRIC DISKS WITH APPLICATION TO SUPERHOLD Stephen H. Lubow	UMP BINARIES	317	225-A1
AE AQUARII: AN EMITTER OF PULSED TeV GAMMA RAYS RESEMBI P. J. Meintjes, B. C. Raubenheimer, O. C. de Jager, C. Brink, H. I. Nel, A.		325	225-A1
MASS-LOSS RATES FOR IRAS-BRIGHT RED GIANTS: A REVISED MOI Joel H. Kastner	DEL OF CIRCUMSTELLAR CO EMISSION	337	225-B11
FAR-INFRARED SPECTRAL STUDIES OF PHASE CHANGES IN WATER Marla H. Moore & Reggie L. Hudson	R ICE INDUCED BY PROTON IRRADIATION	353	225-D5
ROSSELAND MEAN OPACITIES FOR VARIABLE COMPOSITIONS Forrest J. Rogers & Carlos A. Iglesias		361	225-E1
ACCURATE OSCILLATOR STRENGTHS FOR ULTRAVIOLET LINES OF INTERSTELLAR MATERIAL S. R. Federman, D. J. Beideck, R. M. Schectman, & D. G. York	Ar I: IMPLICATIONS FOR	367	225-E9
FORCED RECONNECTION, CURRENT SHEETS, AND CORONAL HEAT Xiaogang Wang & A. Bhattacharjee	TING	371	225-F1
A NEW DETERMINATION OF THE SOLAR ROTATION RATE N. R. Sheeley, Jr., YM. Wang, & A. G. Nash		378	225-F9
ON THE INCLINATION OF PHOTOSPHERIC SOLAR MAGNETIC FIEL Norman Murray	DS	386	225-G5
THE ENERGY SPECTRA OF SOLAR FLARE HYDROGEN, HELIUM, OSTOCHASTIC ACCELERATION J. E. Mazur, G. M. Mason, B. Klecker, & R. E. McGuire	XYGEN, AND IRON: EVIDENCE FOR	398	226-A5
EXTREME ULTRAVIOLET LINE RATIOS FOR Ca xv APPLICABLE TO F. P. Keenan, E. S. Conlon, V. J. Foster, K. M. Aggarwal, & K. G. Widing	SOLAR FLARE SPECTRA	411	226-B5
PHOTON ESCAPE PROBABILITIES FROM RESOLVED SOURCES: APP S. O. Kastner & A. K. Bhatia	LICATION TO SOLAR C III LIMB EMISSION	416	226-C1

CONTENTS

1992 DECEMBER 20, Number 2

	Page	Fiche
CYLINDRICAL UNIVERSES WITH HEAT AND NULL RADIATION FLOW L. K. Patel & Naresh Dadhich	433	228-B1
VISCOUS FLUID IN A FIVE-DIMENSIONAL COSMOLOGICAL MODEL Subenoy Chakraborty & Gopal Ch. Nandy	437	288-B6
COSMOLOGICAL TIDAL SHEAR John Dubinski	441	228-B12
A SIMPLE MULTIFRACTAL MODEL OF NONLINEAR GRAVITATIONAL CLUSTERING Antonello Provenzale, Piero Galeotti, Giuseppe Murante, & Barbara Villone	455	288-D1
LENSCLEAN: AN ALGORITHM FOR INVERTING EXTENDED, GRAVITATIONALLY LENSED IMAGES WITH APPLICATION TO THE RADIO RING LENS PKS 1830 – 211 Christopher S. Kochanek & Ramesh Narayan	461	228-D8
ON THE UNCERTAINTIES IN THE PROPERTIES OF QUASAR HOST GALAXIES R. G. Abraham, C. S. Crawford, & I. M. McHardy	474	228-E9
INFRARED LINES FROM ACTIVE GALACTIC NUCLEI: A THEORETICAL APPROACH Marcella Contini & Sueli M. Viegas	481	228-F3
HIGH-ENERGY PARTICLE ACCELERATION BY EXPLOSIVE ELECTROMAGNETIC INTERACTION IN AN ACCRETION DISK C. A. Haswell, T. Tajima, & JI. Sakai	495	228-G5
OH AND H I ABSORPTION AT THE NUCLEUS OF NGC 660 Willem A. Baan, James Rhoads, & Aubrey D. Haschick	508	229-A6
A SURVEY OF ULTRAVIOLET VARIABILITY IN BLAZARS Rick Edelson	516	229-B1
HUBBLE SPACE TELESCOPE FAINT OBJECT SPECTROGRAPH AND GROUND-BASED OBSERVATIONS OF THE BROAD ABSORPTION LINE QUASAR 0226 – 1024 Kirk T. Korista, Ray J. Weymann, Simon L. Morris, Michael Kopko, Jr., David A. Turnshek, George F. Hartig, Craig B. Foltz, E. Margaret Burbidge, & Vesa T. Junkkarinen	529	229-C1
OPTICAL SPECTROPHOTOMETRY OF WOLF-RAYET GALAXIES William D. Vacca & Peter S. Conti	543	229-D1
HEATING OF H II REGIONS WITH APPLICATION TO THE GALACTIC CENTER Philip R. Maloney, David J. Hollenbach, & Charles H. Townes	559	229-E5
THE LOW FILLING FACTOR OF DUST IN THE GALAXY Jayant Murthy, H. J. Walker, & R. C. Henry	574	229-F8
THE ABUNDANCE OF BORON IN THREE HALO STARS Douglas K. Duncan, David L. Lambert, & Michael Lemke	584	229-G6
DEPOSITION OF MASS, MOMENTUM, AND ENERGY BY MASSIVE STARS INTO THE INTERSTELLAR MEDIUM Claus Leitherer, Carmelle Robert, & Laurent Drissen	596	230-A6
GENERAL RELATIVISTIC STRUCTURE OF STAR-TOROID SYSTEMS Shogo Nishida, Yoshiharu Eriguchi, & Antonio Lanza	618	230-C1
A SEARCH FOR CIRCULAR POLARIZATION IN CATACLYSMIC VARIABLES H. S. Stockman, Gary D. Schmidt, G. Berriman, James Liebert, R. L. Moore, & D. T. Wickramasinghe	628	230-C1
ON THE LONG-TERM BEHAVIOR OF SS CYGNI John K. Cannizzo & Janet A. Mattei	642	230-E1
FRAGMENTATION OF ELONGATED CYLINDRICAL CLOUDS. V. DEPENDENCE OF MASS RATIOS ON INITIAL CONDITIONS Ian Bonnell & Pierre Bastien	654	230-F1
VLBI SURVEY OF ρ OPHIUCHI: A POPULATION OF MAGNETIZED, DISKLESS YOUNG STELLAR OBJECTS Philippe André, Bryan D. Deeney, Robert B. Phillips, & Jean-François Lestrade	667	230-G1
EXOSAT OBSERVATIONS OF THE Be/X-RAY BINARY 4U 2206+54 Privamvada Saraswat & Krishna M. V. Apparao	678	231-A1

CONTENTS

	ruge	riche
EXOSAT OBSERVATIONS OF THE X-RAY BINARY PULSAR 4U 1538 - 52 N. R. Robba, G. Cusumano, M. Orlandini, D. Dal Fiume, & F. Frontera	685	231-A10
ABSORPTION-LINE PROFILES IN A COMPANION SPECTRUM OF A MASS-LOSING COOL SUPERGIANT Liliya L. Rodrigues & Erika Böhm-Vitense	695	231-B10
ULTRAVIOLET OBSERVATIONS OF THE GAS PHASE ABUNDANCES IN THE DIFFUSE CLOUDS TOWARD ζ OPHIUCHI AT 3.5 KILOMETERS PER SECOND RESOLUTION Blair D. Savage, Jason A. Cardelli, & Ulysses J. Sofia	706	231-C9
SEARCH FOR PERIODIC GAMMA-RAY EMISSION FROM CYGNUS X-3 BY THE EGRET TELESCOPE ON THE COMPTON GAMMA-RAY OBSERVATORY P. F. Michelson, D. L. Bertsch, J. Chiang, C. E. Fichtel, R. C. Hartman, S. D. Hunter, G. Kanbach, D. A. Kniffen, P. W. Kwok, Y. C. Lin, J. R. Mattox, H. A. Mayer-Hasselwander, C. von Montigny, P. L. Nolan, K. Pinkau, H. Rothermel, E. Schneid, M. Sommer, P. Sreekumar, & D. J. Thompson	724	231-E1
OBSERVATIONAL CONSTRAINTS ON SOLAR NEBULA NITROGEN CHEMISTRY: N ₂ /NH ₃ Maria Womack, Susan Wyckoff, & L. M. Ziurys	728	231-E6
THE COEVOLUTION OF DECIMETRIC MILLISECOND SPIKES AND HARD X-RAY EMISSION DURING SOLAR FLARES Markus J. Aschwanden & Manuel Güdel	736	231-F1
SOLAR DOPPLER-SHIFT MEASUREMENTS IN THE Ne VII 465 Å EMISSION LINE John T. Mariska & James F. Dowdy, Jr.	754	231-G8
ON THE PHOTON DIFFUSION TIME SCALE FOR THE SUN R. Mitalas & K. R. Sills	759	232-A1
COORDINATED SPECTRAL AND TEMPORAL Hα OBSERVATIONS OF A SOLAR FLARE JF. de la Beaujardière, Alan L. Kiplinger, & Richard C. Canfield	761	232-A5
NEW OBSERVATIONS OF 5 MINUTE OSCILLATIONS IN THE OPPOSITE FLANKS OF SOLAR FRAUNHOFER LINES. I. THE EFFECT OF VARYING THE SPECTRAL AND TEMPORAL RESOLUTION L. Bertello, B. Caccin, P. Francia, & E. Pietropaolo	768	232-B1
ON IONIZED NAPTHALENE ($C_{10}H_{\circ}^{B}$) AS A CARRIER OF DIFFUSE INTERSTELLAR BANDS Theodore P. Snow	775	232-B10
ABSTRACTS OF THE ASTROPHYSICAL JOURNAL SUPPLEMENT SERIES, 1993 JANUARY		
A Spectroscopic Study of Damped Lyman-α Systems in the Las Campanas/Palomar Survey Limin Lu, Arthur M. Wolfe, David A. Turnshek, & Kenneth M. Lanzetta	778	232-C1
Automated Galaxy Redshift Measurements from Very Low Dispersion Objective Prism Schmidt Plates Peter Schuecker	778	232-C1
Model Atmospheres: Tool for Identifying Interstellar Features P. C. Frisch, S. E. Slojkowski, T. Rodriguez-Bell, & D. York	779	232-C2
A STUDY OF METAL ABUNDANCE PATTERNS IN COOL WHITE DWARFS. II. SIMULATIONS OF ACCRETION EPISODES J. Dupuis, G. Fontaine, C. Pelletier, & F. Wesemael	779	232-C2
Two-dimensional Stochastic Processes in Astronomy B. Bucciarelli, M.G. Lattanzi, & L. G. Taff	780	232-C3
RATIONAL FUNCTION APPROXIMATIONS FOR FERMI-DIRAC INTEGRALS H. M. Antia	780	232-C3

